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C. H. HUCKELBERRY
County Administrator

February 4, 2005

Mr. Steve Pawlowski
Surface Water Monitoring and Standards Unit Manager
Arizona Department of Environmental Quality
1110 W. Washington
Phoenix, Arizona 85007

Re: **Davidson Canyon Unique Water Nomination**

Dear Mr. Pawlowski:

Pima County is pleased to provide the Arizona Department of Environmental Quality with the attached nomination to classify Davidson Canyon as a Unique Water, pursuant to R18-11-112 of the Arizona Administrative Code. The nominated reach, which meets all of the criteria specified in R18-11-112, extends from the unnamed spring at 31°59'00" / 110°38'46" to the confluence with Cienega Creek.

Davidson Canyon is a rare, perennial, low-elevation desert stream with native fish and frogs, unique riparian vegetative communities, and spectacular geology. It is one of the most important wildlife migration corridors in this part of Arizona. All available data indicate that the water quality of Davidson Canyon is excellent. In addition, a recent study has shown that Davidson Canyon contributes a significant portion of the flow in Cienega Creek, which is already designated as a Unique Water.

In recognition of Davidson Canyon's outstanding ecological and recreational values, Pima County is purchasing private lands and State Trust Land grazing leases along the nominated reach to augment the Cienega Valley Reserve system. We are using public open space bond funds and state Transportation Enhancement funds for this purchase. Considering that the stream is the principal feature of the planned preserve, it is critical that its water quality be maintained.

The attached nomination report should provide the necessary information for the Arizona Department of Environmental Quality to classify Davidson Canyon as a Unique Water in the upcoming Triennial Review. We will be providing additional water quality data and letters of support in the near future to supplement the attached report. In the meantime, please let me know if you need any additional information for this nomination to proceed.

Sincerely,

C. H. Huckelberry
County Administrator

CHH/jj

Attachment

c: John Bernal, Deputy County Administrator - Public Works
Suzanne Shields, Regional Flood Control District Director

DRAFT– JANUARY 2005

Unique Waters Nomination

DAVIDSON CANYON

Prepared by Pima Association of Governments Watershed Planning
Prepared for Pima County Regional Flood Control District

PIMA COUNTY BOARD OF SUPERVISORS
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COUNTY ADMINISTRATOR
C.H. Huckelberry

Unique Water Nomination

for

Davidson Canyon

Prepared for
Pima County Regional Flood Control District

Prepared by
Pima Association of Governments
Watershed Planning

February 2005

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Unique Water Nomination for Davidson Canyon

I. Introduction

Davidson Canyon is a rare confluence of desert and riparian habitat that contains perennial water and habitat for numerous vulnerable species. Davidson Canyon also provides a wildlife migration corridor between the Santa Rita and Empire Mountains to the south and the Rincon Mountains to the north. The corridor includes Pima County's Cienega Creek Natural Preserve, which includes the lower portions of Davidson Canyon. Pima County is asking the Arizona Department of Environmental Quality (ADEQ) to designate Davidson Canyon a Unique Water.

A Unique Water is a surface water that is classified as an outstanding State water resource by ADEQ under A.A.C. R18-11-112. The Unique Water program is administered by ADEQ to give outstanding surface waters special water quality protection under the State's antidegradation rule, A.A.C. R18-11-107. A Unique Water designation provides a level of protection so that the outstanding waters will not undergo long-term degradation. ADEQ classifies a surface water as a Unique Water based on characteristics discussed in this report. The Antidegradation Rule and Unique Waters Rule are included in Appendix A.

Pima County's primary intent in participating in the Unique Water program is to protect the existing water resources of Davidson Canyon from being degraded by human activities. Protecting water resources will benefit both the aquatic and non-aquatic flora and fauna that depend on Davidson Canyon, as well as assuring continuation of a high-quality drinking water source derived from natural recharge. Protecting the water resources of Davidson Canyon will also benefit Cienega Creek, which receives waters from Davidson Canyon and is classified as a Unique Water by ADEQ.

<u>Purpose</u>

The purpose of this report is to demonstrate that Davidson Canyon exhibits the following Unique Water characteristics (described in A.A.C. R18-11-112):

1. The surface water is a perennial water;
2. The surface water is in a free-flowing condition;
3. The surface water has good water quality;
4. The surface water meets one or both of the following conditions:
    a. The surface water is of exceptional recreational or ecological significance because of its unique attributes.
    b. Threatened or endangered species are known to be associated with the surface water and the existing water quality is essential to the maintenance and propagation of threatened or endangered species or the surface water provides critical habitat for a threatened or endangered species.

Description of Nominated Surface Water (R18-11-112.C.1.)

Davidson Canyon is located in eastern Pima County, approximately 28 miles southeast of downtown Tucson (Figure 1). It drains much of the Empire Mountains and the northeastern portions of the Santa Rita Mountains, and it is a major tributary to lower Cienega Creek. The watershed is located within Hydrologic Unit (HU) 15050302 and the vast majority is located within the Arizona Department of Water Resources (ADWR) Tucson Active Management Area (AMA). Interstate 10 crosses Davidson Canyon at the southern boundary of the Cienega Creek Natural Preserve. The canyon is located between Highway 83 to the west and upper Cienega Creek to the east. The general flow direction for streamflow and groundwater in Davidson Canyon is north towards the Cienega Creek Natural Preserve and lower Cienega Creek.

The stream segment of Davidson Canyon nominated for Unique Water designation corresponds with ADEQ-delineated reaches listed in the ADEQ water quality standards for surface waters (R18-11, Appendix B). Table 1 shows the ADEQ-delineated reaches of Davidson Canyon.

Table 1. ADEQ-Delineated Reaches of Davidson Canyon

Reach	Reach Extent	ADEQ Designated Uses
1	Headwaters to unnamed spring at 31° 59' 00" / 110° 38' 46"	A&We, PBC, AgL
2	Unnamed spring to confluence with unnamed tributary at 31° 59' 32.5" / 110° 38' 43.5'	A&Ww, FBC, FC, AgL
3	From confluence with unnamed tributary to unnamed spring at 32° 00' 54" / 110° 38' 54"	A&We, PBC, AgL
4	From unnamed spring at 32° 00' 54" / 110° 38' 54" to confluence with Cienega Creek	A&Ww, FBC, FC, AgL

The nominated segment of Davidson Canyon begins at the unnamed spring at 31° 59' 00" / 110° 38' 46" and ends at the confluence with Cienega Creek. It corresponds to reaches 2, 3, and 4 described in Table 1 and is shown on Figure 2. The segment is 3.2 miles in length, with roughly 0.75 miles of perennial streamflow and 1.25 miles of intermittent streamflow (PAG, 2000a). The elevation at the upper end of the nominated segment is 3520 feet above sea level and the elevation of the lower end is 3320 feet. Perennial and intermittent streamflow and pools exist south of Interstate 10 near the unnamed spring at 31° 59' 00" / 110° 38' 46" (reach 2), and intermittent water is present near the confluence with Cienega Creek within the Cienega Creek Natural Preserve (reach 4). These two reaches are separated by an ephemeral reach (reach 3) with shallow groundwater. In general, streamflow is perennial or intermittent where the volume of channel alluvium is restricted by bedrock and groundwater is forced to the surface. Where the width or depth of the alluvium increases, streamflow becomes intermittent or ephemeral.

Streamflows consist of base flows and storm flows. Base flows are produced by discharges from the aquifer, while storm flows result from precipitation and runoff. Davidson Canyon receives runoff from both rainfall events and snowmelt. The United States Geological Survey (USGS) maintained a stream gage in the canyon near the I-10 crossing from 1968 to 1981 (USGS #09484590), but the gage is no longer in operation. The Pima County Flood Control District maintains a stream gage at the old USGS gage site for flood warning purposes only. This gage is not useful for measuring baseflows in the creek.

Davidson Canyon is an important source of water for Cienega Creek and the Cienega Creek Natural Preserve. Even when surface waters near the confluence are dry, Davidson Canyon contributes subsurface flow to the shallow aquifer that underlies Cienega Creek and supports streamflow and riparian habitat. A study by Pima Association of Governments (PAG, 2003) showed that 8% to 24% of streamflow in Cienega Creek at the Marsh Station Road bridge originated in Davidson Canyon. The relative contribution from Davidson Canyon was found to be highest in months when flows in Cienega Creek were at their lowest.

The reach of Davidson Canyon near the confluence with Cienega Creek has intermittent streamflow. This reach has been monitored by PAG staff since the mid-1990's. Streamflow in this reach often persists for many months each year and has been present for 9 of the last 14 quarterly monitoring events. Measurable streamflow was also present during three of five surface water sampling events from June 2002 to June 2003. Pools are often seen at the bedrock outcrops, and fish, frogs, frog eggs, snakes, turtles, aquatic plants, and aquatic insects have been seen in these pools.

Land Ownership

The reach nominated for Unique Water designation is contained within private land, State Trust land, and Pima County's Cienega Creek Natural Preserve (Figure 2). Pima County is currently in the process of acquiring the Bar V Ranch, which includes the private parcels within the canyon and the grazing leases to the State Trust land surrounding the nominated portion of the canyon. By acquiring the private land and the rights to use the State Trust land containing and surrounding the proposed Unique Water, Pima County will have the ability to manage the Unique Water and a large portion of its watershed to maintain and protect its existing water quality.

Importance of the Ephemeral Reach

The two reaches in Davidson Canyon that have persistent surface water are separated by an ephemeral reach, which is associated with shallow groundwater that supports valuable riparian vegetation. Groundwater levels have been measured on numerous occasions in a well adjacent to the ephemeral part of the nominated segment of Davidson Canyon. The water level data is included in Appendix B. The well is located near the old USGS stream gage site, on the west bank of the canyon, approximately 50 feet from the channel, along a reach with intermittent to ephemeral streamflow. Depth to water in the well is generally between 15 feet to 20 feet below the surface, though variations have occurred. Based on approximate land surface elevations at the well and at the stream channel, a depth to water of 15 feet in the well indicates that groundwater is only about 5 feet below the stream channel. This shallow groundwater supports a thriving riparian community. No other monitoring well exists along the nominated segment, though water levels in the Cienega Creek Natural Preserve have been monitored by PAG on a monthly basis since 1993.

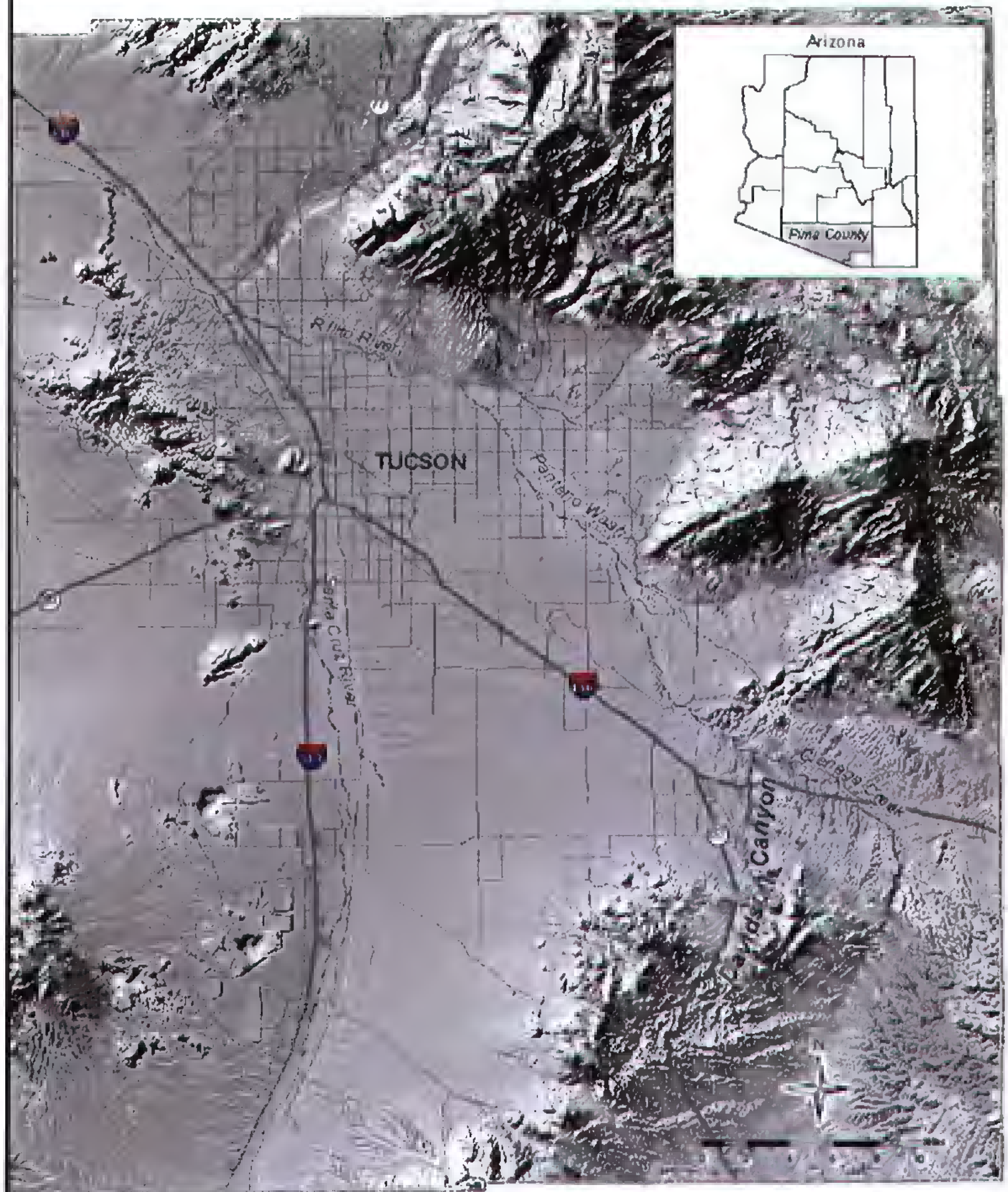

Figure 1. General Location of Davidson Canyon.

Major Wash or Creek   Pima County Boundary   Major Street or Highway

Figure 2. ADEQ-Delineated Reaches in Davidson Canyon

Spring
Perennial Stream Reach
Intermittent Stream Reach
Bar V Ranch Acquisition -- State Trust Land
Bar V Ranch Acquisition -- Private Land
Cienega Creek Natural Preserve
Wash or Creek
Street
Railroad

January 2005

II. Characteristics that Qualify Davidson Canyon as a Unique Water

As stated previously, ADEQ may designate a surface water as a Unique Water based on four characteristics. The characteristics are described in detail in A.A.C. R18-11-112 (see Appendix A). This section of the report describes Davidson Canyon in the context of the Unique Waters characteristics.

Perennial Water (R18-11-112.D.1.)

Perennial and intermittent surface water is present near the upper and lower ends of the nominated segment of Davidson Canyon, as shown on Figure 2. Perennial water is associated with the unnamed spring at 31° 59' 00" / 110° 38' 46" and has been observed on numerous occasions. Neither Pima County staff nor PAG staff has ever observed this reach to be without flow, despite numerous field visits between 1991 and 2004.

The most convincing evidence that the flow is perennial is documentation of continuous flow on multiple occasions during dry periods, including April 1991, May 1991, June 1991, April 1992, May 1992, June 1992, April 1993, May 1993, June 1993, April 1994, May 1994, June 1994, May 1996, June 2002 and May 2003. (April, May and June are the driest months of the year in this part of Arizona). In May 1996, following a dry winter, streamflow and pools were present near the spring, along with "abundant" fish, aquatic plants (including algal mats), and aquatic insects. These features were also seen in December 1999 and again in January 2004. The January 2004 observations are significant because the perennial water features were present even after several years of major drought conditions. In addition, Davidson Canyon hosts a population of lowland leopard frogs.

Supporting evidence of perennial flow includes a spring shown on the USGS quadrangle for the area. The "unnamed spring" at the upper end of the segment is shown on the USGS Mount Fagan 7.5 Minute topographic quadrangle. According to field notes taken by Pima County personnel in May 1996 (see Appendix C), a nearby resident has never observed this spring to desiccate. A spring at the lower end of the segment (unnamed spring at 32° 00' 54" / 110° 38' 54") is shown on the USGS Vail 7.5 Minute topographic quadrangle. The lower spring, however, produces streamflow for only part of the year.

In addition, PAG conducted a study in 2002-03 on contributions from Davidson Canyon to streamflow in Cienega Creek. Quarterly surface water samples were collected from two reaches along Davidson Canyon. One reach was located near the spring south of I-10 (i.e., upper reach) and the other was located near the spring upstream from the confluence with Cienega Creek (i.e., lower reach). Because the objective for the study was to obtain water samples from the downstream-most reach of the canyon, water samples were usually collected in the upper reach only when the lower reach did not have measurable streamflow. Samples were collected from the upper reach in June

2002, August 2002, and May 2003. Samples were collected from the lower reach in June 2002, October 2002 and January 2003.

Additional supporting evidence for perennial flow conditions is the extensive set of depth-to-groundwater data showing the consistent presence of shallow groundwater adjacent to the ephemeral reach downstream from the perennial reach (Appendix B).

On a final note, Davidson Canyon is identified as a perennial stream with "two species of fish, frogs" in the peer-reviewed report *GIS Coverage of Perennial Streams and Intermittent Streams and Areas of Shallow Groundwater*, which was prepared by the Pima Association of Governments for the Sonoran Desert Conservation Plan in January 2000. The PAG report was prepared under the supervision of a Technical Advisory Committee consisting of local experts in hydrology, biology and ecology from the University of Arizona, state and federal agencies, and other organizations. The PAG report assigned the inventoried streams to one of three categories, based on the certainty of the perennial or intermittent designation. The perennial reach of Davidson Canyon was assigned the highest level of certainty in the report. The report also states that under the advice of the Technical Advisory Committee, PAG took a conservative approach in designating streams as perennial. Relevant text from the PAG 2000 report is included in Appendix D.

Recent observations of perennial flow in Davidson Canyon, south of I-10, are included on Table 2. Available field notes and photographs indicating perennial streamflow are included in Appendix C.

Table 2. Observations of Perennial Flow in Davidson Canyon, south of I-10.

Date	Observations and Sampling Events
May 19, 1996	Streamflow, pools, fish, aquatic plants and insects observed
December 15, 1999	Streamflow, pools, fish, aquatic plants and insects observed
June 4, 2002*	Streamflow observed, surface water samples collected
August 2, 2002*	Streamflow observed, surface water samples collected
May 8, 2003*	Streamflow observed, surface water samples collected
January 2004	Streamflow and fish observed

* The purpose of these site visits was to collect water chemistry samples; fish, aquatic plants and insects presumably were present but no observations were recorded in the field notes.

Free-Flowing Condition (R18-11-112.D.2.)

No diversions, impoundments, channelizations, bank armor, or other hydrological modifications are present along the segment of Davidson Canyon nominated for Unique Water designation. USGS topographic quadrangles, aerial photography, the ADWR surface water rights database, and available records of field observations were reviewed and no evidence was found for the existence of these types of features in the nominated segment of Davidson Canyon.

Aerial photography shows a 0.9-acre stock tank next to the stream channel, with a linear, earthen channel that collects flood flows from the stream channel. However, the tank and its channel are located 1.5 miles upstream from the perennial waters and are not located within the nominated segment of Davidson Canyon. Other modifications, such as a berm to divert flood flows into the stock tank's channel, were not obvious in aerial photography nor were descriptions of such features included in available field notes and reports.

Water Quality (R18-11-112.D.3.)

Based on six samples of base flows collected by PAG during five sampling rounds between June 4, 2002, and May 7, 2003, Davidson Canyon has excellent water quality. In fact, Davidson Canyon has lower concentrations of TDS and most major constituents than Cienega Creek, which is already designated as a Unique Water. Davidson Canyon is a significant tributary to Cienega Creek, and PAG's sampling results showed that Cienega Creek's base flows are consistently diluted by Davidson Canyon's base flow contributions. PAG's study showed that Davidson Canyon contributes between 8% and 24% of the base flow in Cienega Creek at the Marsh Station Road bridge.

All available water quality data for Davidson Canyon are included in Appendix B. These data are from the PAG (2003) study, and the data are mostly limited to major cations and anions. However, the data include several constituents relevant to water quality determinations, including aluminum, arsenic, sulfate, nitrate, TDS and pH. All six samples collected between 2002 and 2003 were non-detect for arsenic (PQL = 0.0050 mg/L), aluminum (PQL = 2.0 mg/L) and nitrate (PQL = 1.0 mg/L). TDS averaged 437 mg/l at the downstream location (above the confluence with Cienega Creek) and 460 mg/l at the upstream location (upstream of Interstate 10). Sulfate averaged 85 mg/l and 94 mg/l at these locations, respectively. Field pH results from all six samples ranged from 7.39 to 7.93. For all the constituents, spatial and seasonal variation was minimal.

All available data indicate that Davidson Canyon meets applicable water quality standards. The water has never been listed as impaired.

Exceptional Values (R18-11-112.D.4.a., R18-11-112.D.4.b.)

Davidson Canyon has numerous unique attributes of recreational and ecological significance. It is one of the largest drainages in the Cienega Corridor, which has been designated one of seven "Endangered Cultural Landscapes" by the Cultural Landscape Foundation in Washington, D.C. It is one of the most important wildlife movement corridors in the area, linking the Rincon Mountains to the Santa Rita Mountains. Interstate 10 is a significant barrier to many animals, except at rare locations like Davidson Canyon, where the interstate passes high overhead on a bridge. The combination of an open passage beneath Interstate 10 and the presence of perennial water in a low-elevation desert environment make Davidson Canyon an extremely important area for wildlife.

Recreation Potential

Davidson Canyon offers outstanding recreational opportunities. Two key portions of the Arizona Trail cross the Bar V Ranch properties being acquired by Pima County. The Arizona Trail is an 800-mile shared-use recreational trail that extends from the Utah border to Mexico. It crosses Interstate 10 at Davidson Canyon. In addition, the Davidson Canyon Trail is listed as Trail #56 on the Eastern Pima County Trail System Master Plan. It is popular with hikers and equestrians. Other trails in the area include the Davidson Loop Trail, the Andrada Ranch Link, and the Gas Line Trail, which is an important regional connector trail. These trails make the creek an excellent recreational destination for hikers, bicyclists and equestrians.

The area also offers outstanding opportunities for birdwatching. Davidson Canyon is a major tributary to Cienega Creek, and the lowermost reach of Davidson is included in the Cienega Creek Natural Preserve. The Cienega Creek Natural Preserve is listed by the National Audubon Society as a Potential Arizona Important Bird Area. Three bird species (Bell's Vireo, Swainson's Hawk and Abert's Towhee) have been listed by the Environmental Planning Group, Inc. (EPG) as Priority Vulnerable Species having a high likelihood of being present along a portion of the nominated reach of Davidson Canyon.

Scenic/Aesthetic Values

Davidson Canyon is a scenic riparian area with abundant open space, rugged topography and lush woodlands. The vegetation and tilted sedimentary rocks which are exposed in the canyon contribute greatly to the scenic character of the land. This is one of the few places where one can see both the juniper and the saguaro cactus growing in close proximity, another factor which contributes to the visual attractiveness of the landscape.

An example of the widespread recognition of the area's scenic value is Pima County's successful acquisition of State Transportation Enhancement funds for its purchase of lands along Davidson Canyon. The funds were awarded to preserve the scenic character of Interstate 10 at the Davidson Canyon crossing. In addition, both State Highway 83, which roughly parallels Davidson Canyon, and this part of Interstate 10, are officially designated as Scenic Routes by the State.

Geology

This reach of Davidson Canyon provides exposures of exceptionally interesting geology. In particular, near-vertical beds of the Cretaceous Bisbee Group are well exposed adjacent to the much-older Paleoproterozoic Pinal Schist. The area includes significant folding and faulting.

From a scientific standpoint, Davidson Canyon's greatest geologic value is its demonstration of the role that geologic structures play in creating perennial streamflow in alluvial basins in the Sonoran Desert. Most perennial water sources in Southern Arizona occur along mountain slopes. Low-elevation perennial streams in the broad alluvial valleys are very rare. Where they do exist, in many cases these streams are formed where bedrock is present at or near the land surface, causing a thinning of the aquifer and a forcing of the groundwater to the surface. The bedrock exposures along the perennial reaches of Davidson Canyon provide an outstanding display of this geologic phenomenon.

Wildlife Corridor

Protection of Davidson Canyon is essential because it is a major tributary to Cienega Creek and acts as a linkage of riparian habitat from the Santa Rita Mountains to the Rincon Mountains. According to the Sonoran Desert Conservation Plan's vision for the establishment of the Davidson Canyon Natural Preserve, no other linkage in the region would connect as many existing or proposed parks or preserves. Furthermore, Interstate Highway 10 is a barrier to the movement of many terrestrial animals. Davidson Canyon is one of only two drainages where the junction with I-10 is bridged, allowing wildlife passage across the interstate.

Flora and Fauna

Davidson Canyon is a unique area due to its geographic location and topography. Within the nominated reach, there are low, gently rolling hills at the northern end and steep canyon walls and slopes at the southern end. The vegetation communities present in the canyon are a mix of several regional vegetation types, including the Chihuahuan Desert, the Lower Colorado River subdivision of the Sonoran Desert, and the Great Basin Conifer Woodland. As a result, it is not uncommon to find saguaros and one-seed junipers right next to each other.

As seen in Appendix E, a diverse group of flora exists in Davidson Canyon. Given the diversity of vegetation types in the canyon, it is possible to identify the different fauna that would be present in the canyon over the course of a year. In 2004, EPG identified 52 mammals, nearly 100 birds, 12 amphibians, and 39 reptiles that are or could potentially be present in the canyon. Appendix E includes plant lists from two different studies.

Threatened and Endangered Species

The unique combination of vegetation communities in Davidson Canyon results in an ability to support a variety of rare flora and fauna. The yew-leafed willow is an example of a plant that occurs in Davidson Canyon, but is not found in the adjoining Cienega Creek Natural Preserve. Some plants and animals listed under the Sonoran Desert Conservation Plan (SDCP) as Priority Vulnerable Species (PVS) occur or are likely to occur in Davidson Canyon. The Bar V Ranch property provides potential habitat for at least 34 of the 55 species listed in the SDCP: 9 mammals, 8 birds, 7 amphibians and reptiles, 6 fish, and 4 plants (see Appendix F). As marked in Appendix F, 9 of the 34 PVS species are also federally listed as threatened, endangered, or proposed endangered by the U.S. Fish & Wildlife Service. Another eleven are federally listed as species of concern. Based on suitable habitat on the ranch property, the endangered lesser long-nosed bat has a high probability of being present in the area. Populations of longfin dace and the lowland leopard frog, both federal species of concern, have been observed in the nominated reach of the canyon.

Davidson Canyon has both perennial and intermittent stream flow and the reach of perennial flow occurs on the current Bar V Ranch property. Many vulnerable species are dependent on good water quantity and quality. As an example, most North American bats require a percentage of drinking water, as opposed to water contained in the food they consume, as part of their daily water needs. They also require ample surface area to be able to drink in flight (Kurta, 2000; Cockrum, 1981). Davidson Canyon meets both needs. Reduced water availability or degraded water quality may result in dehydration or death for the animal and change the diversity of insects that many bats depend on for food (Kurta, 2000). Incidentally, the endangered Gila topminnow, the proposed endangered Gila chub, and the longfin dace all rely on aquatic insects as a component of their diet.

Water Quality

As noted previously, Davidson Canyon has excellent water quality. Davidson Canyon has lower concentrations of TDS and most major constituents than Cienega Creek, which is already designated as a Unique Water. Available data indicate that appropriate surface water quality standards are easily met.

III. Conclusion and Recommendation

As shown by the information compiled for this nomination document, Davidson Canyon clearly meets the criteria listed in R18-11-112D for classifying a surface water as a Unique Water:

- the creek is perennial
- the creek is free flowing
- the creek has good water quality
- the creek is of exceptional recreational and ecological significance
- threatened and endangered species are associated with the creek and the existing water quality is essential for the species.

We therefore recommend that ADEQ classify Davidson Canyon, from the unnamed spring at 31º59'00"/110º38'46" to the confluence with Cienega Creek, as a Unique Water, based on the criteria above.

This recommendation is supported by the factors identified in the R18-11-112G, as discussed below.

Management (R18-11-112.G.1.)

The nominated reach of Davidson Canyon, the associated water rights, and surrounding lands are being acquired by Pima County as part of the Sonoran Desert Conservation Plan. Pima County is also acquiring the State Land grazing leases associated with the ranch the County is purchasing. Much of the rest of the watershed is also publicly owned, either by the State Land Department or the Bureau of Land Management. Therefore, it is very feasible to manage the creek and its watershed to maintain water quality.

According to Pima County's Bar V Ranch acquisition report (Pima County, 2004) and as part of the acquisition agreement for the Bar V Ranch, the current owner of the property, Martin Cattle Company, will continue to manage the majority of the ranch for Pima County. It is likely that the County will manage the 300 acres of private lands, which adjoin the County's Cienega Creek Natural Preserve and contain perennial water, as an extension of the County's preserve. The lands within the Preserve are subject to the management goals and policies adopted by the Pima County Board of Supervisors in 1987.

In addition, we can expect that future management of Davidson Canyon will be similar to management of the existing Cienega Creek Natural Preserve in many ways. At Cienega Creek, PAG and Pima County have conducted regular monitoring and numerous special studies since the preserve was created and Unique Water status was obtained. Now that Davidson Canyon is also coming under County ownership, it is likely that similar monitoring and research activities will also occur in Davidson Canyon. This should contribute significantly to ADEQ's management needs.

Social and Economic Impact (R18-11-112.G.2.)

Tier 3 antidegradation protection will have positive social and economic impacts to the state and region. Pima County is spending approximately $8.7 million in public funds to acquire lands along this reach of Davidson Canyon. These include money from Pima County's Open Space Bond and Arizona's Transportation Enhancement program. The stream and associated riparian habitat are the premier public attraction within these lands, and strict protection of the water quality is therefore warranted. Any degradation of the water quality would be counter to the public's social and economic interests, particularly since so much public money has been spent to acquire the creek and surrounding lands for preservation.

Furthermore, nature tourism is important to Southern Arizona's economy. According to the Arizona Office of Tourism's *Statistical Report 2003*, 26% of overnight visitors to Arizona participated in nature-related activities. Riparian areas are a key part of nature tourism in Arizona. For example, the National Park Service's Rivers, Trails and Conservation Assistance program (RTCA) web site states the following:

> "Ramsey Canyon Reserve and the San Pedro National Conservation Area (RNCA) in southern Arizona attract a significant number of visitors from outside the local area. Approximately two-thirds of the visitors to these sites are from outside of Arizona .... These visitors bring economic activity not only to southeastern Arizona, but to the state as a whole." (http://www.nps.gov/pwro/rtca/tourism.htm#natural)

Davidson Canyon is a riparian area that provides an outstanding opportunity for hiking and for viewing native aquatic wildlife and rare bird life, thus contributing significantly to the local outdoor recreation and eco-tourism industries. Protection of the creek's water quality is key to continuing the area's contribution to these industries.

Public and Agency Support (R18-11-112.G.3., R18-11-112.G.4.)

Several local public interest groups support the nomination of Davidson Canyon as a Unique Water. Letters of support are included in Appendix G.

Agency Resource Constraints (R18-11-112.G.5.)

As discussed above, Pima County's ownership of lands along Davidson Canyon will allow the creek's water quality to be maintained with minimal action by ADEQ. Therefore, agency resources should be sufficient for this designation to be made. PAG would be willing to help ADEQ host the public meeting required by R18-11-112.F.

Timing (R18-11-112.G.6.)

This nomination is being submitted while ADEQ is in the early stages of its triennial review process. Therefore, this is a highly opportune time for the designation to be made.

Consistency with 208 Water Quality Management Plans (R18-11-112.G.7.)

PAG, the Designate Planning Agency for Section 208 Water Quality Management Planning in Pima County, supports this nomination. PAG prepared the water quality element of Pima County's Sonoran Desert Conservation Plan (SDCP), and an April 2002 PAG SDCP report recommended that Pima County pursue Unique Waters nominations for priority streams such as Davidson Canyon. PAG's current 208 Plan does not identify any existing or planned discharges to Davidson Canyon; therefore a Unique Water designation would not conflict with the Plan.

Location or Special Designation (R18-11-112.G.8.)

Davidson Canyon is a key wildlife corridor between the Santa Rita Mountains and the Rincon Mountains. The Santa Rita Mountains include the Coronado National Forest and Mount Wrightson Wilderness Area, and the Rincon Mountains include the Coronado National Forest, Saguaro National Park and the Rincon Mountain Wilderness Area. The creek is in an area designated in the Sonoran Desert Conservation Plan as Biological Core and Important Riparian Area as part of the County's Conservation Lands System. It is also within the proposed Davidson Canyon Natural Preserve and is encompassed by Bar V Ranch lands being acquired by Pima County. The lowermost reach of the creek is already within the Cienega Creek Natural Preserve.

References

Cockrum, E.L., 1981. Bat Populations and Habitats at the Organ Pipe Cactus National Monument. Technical Report No.7. Cooperative National Park Resource Studies Unit, in cooperation with the University of Arizona.

Kurta, A., 2000. Bats on the Surface: The Need for Shelter, Food, and Water. Proceedings of Bat Conservation and Mining: A Technical Interactive Forum.

Pima Association of Governments (PAG), 2000a. GIS Coverage of Perennial Streams, Intermittent Streams, and Areas with Shallow Groundwater.

Pima Association of Governments (PAG), 2000b. Lower Cienega Basin Source Water Study.

Pima Association of Governments (PAG), 2003. Contribution of Davidson Canyon to Base Flows in Cienega Creek.

Pima County, 2004. Bar V Ranch Acquisition: 2004 Conservation Bond Program. Submitted by the Pima County Administrator to the Conservation Acquisition Commission.

APPENDIX A

ADEQ Antidegradation Rule
ADEQ Unique Water Rule

R18-11-107. Antidegradation

A. The Director shall determine whether there is degradation of water quality in a surface water on a pollutant-by-pollutant basis.

B. Tier 1: The level of water quality necessary to protect existing uses shall be maintained and protected. No degradation of existing water quality is permitted in a surface water where the existing water quality does not meet the applicable water quality standard.

C. Tier 2: Where existing water quality in a surface water is better than the applicable water quality standard, the existing water quality shall be maintained and protected. The Director may allow limited degradation of existing water quality in the surface water, provided that the Department holds a public hearing on whether degradation should be allowed under the general public hearing procedures prescribed at R18-1-401 and R18-1-402 and the Director makes all of the following findings:

1. The level of water quality necessary to protect existing uses is fully protected. Water quality shall not be lowered to a level that does not comply with applicable water quality standards.
2. The highest statutory and regulatory requirements for new and existing point sources are achieved.
3. All cost-effective and reasonable best management practices for nonpoint source pollution control are implemented.
4. Allowing lower water quality is necessary to accommodate important economic or social development in the area where the surface water is located.

D. Tier 3: Existing water quality shall be maintained and protected in a surface water that is classified as a unique water under R18-11-112. The Director shall not allow limited degradation of a unique water under subsection (C).

E. The Department shall implement this Section in a manner consistent with § 316 of the Clean Water Act [33 U.S.C. § 1326] if a potential water quality impairment associated with a thermal discharge is involved.

Historical Note

Adopted effective February 18, 1992 (Supp. 92-1). Amended effective April 24, 1996 (Supp. 96-2). Amended by final rulemaking at 8 A.A.R. 1264, effective March 8, 2002 (Supp. 02-1).

R18-11-112. Unique Waters

A. The Director shall classify a surface water as a unique water by rule. The Director shall consider nominations to classify a surface water as a unique water during the triennial review of water quality standards for surface waters.

B. The Director may adopt, by rule, site-specific water quality standards to maintain and protect existing water quality in a unique water.

C. Any person may nominate a surface water for classification as a unique water by filing a nomination with the Department. The nomination to classify a surface water as a unique water shall include:

1. A map and a description of the surface water;
2. A written statement in support of the nomination, including specific reference to the applicable criteria for unique water classification prescribed in subsection (D);
3. Supporting evidence demonstrating that the applicable unique water criteria prescribed in subsection (D) are met; and

4. Available water quality data relevant to establishing the baseline water quality of the proposed unique water.

D. The Director may classify a surface water as a unique water upon finding that the surface water is an outstanding state resource water based upon the following criteria:
   1. The surface water is a perennial water;
   2. The surface water is in a free-flowing condition. For purposes of this subsection, "in a free-flowing condition" means that a surface water does not have an impoundment, diversion, channelization, rip-rapping or other bank armor, or another hydrological modification within the reach nominated for unique water classification;
   3. The surface water has good water quality. For purposes of this subsection, "good water quality" means that the surface water has water quality that meets or exceeds applicable surface water quality standards. A surface water that is listed as impaired under § 303(d) of the Clean Water Act (33 U.S.C. § 1313) is ineligible for unique waters classification; and
   4. The surface water meets one or both of the following conditions:
      a. The surface water is of exceptional recreational or ecological significance because of its unique attributes, including but not limited to, attributes related to the geology, flora, fauna, water quality, aesthetic values, or the wilderness characteristics of the surface water.
      b. Threatened or endangered species are known to be associated with the surface water and the existing water quality is essential to the maintenance and propagation of a threatened or endangered species or the surface water provides critical habitat for a threatened or endangered species. Endangered or threatened species are identified in Endangered and Threatened Wildlife and Plants, 50 CFR § 17.11 and § 17.12 (revised as of October 1, 2000) which is incorporated by reference and on file with the Department and the Office of the Secretary of State. This incorporation by reference contains no future editions or amendments.

E. The following surface waters are classified as unique waters:
   1. The West Fork of the Little Colorado River, above Government Springs;
   2. Oak Creek, including the West Fork of Oak Creek;
   3. Peoples Canyon Creek, tributary to the Santa Maria River;
   4. Burro Creek, above its confluence with Boulder Creek;
   5. Francis Creek, in Mohave and Yavapai counties;
   6. Bonita Creek, tributary to the upper Gila River;
   7. Cienega Creek, from confluence with Gardner Canyon and Spring Water Canyon at R18E T17S to USGS gaging station at 32°02'09" / 110°40'34", in Pima County;
   8. Aravaipa Creek, from its confluence with Stowe Gulch to the downstream boundary of Aravaipa Canyon Wilderness Area;
   9. Cave Creek and the South Fork of Cave Creek (Chircahua Mountains), from the headwaters to the Coronado National Forest boundary;
   10. Buehman Canyon Creek, from its headwaters (Lat. 32°24'55.5" N, Long. 110°39'43.5"W) to approximately 9.8 miles downstream (Lat. 32°24'31.5" N, Long. 10°32'08" W);
   11. Lee Valley Creek, from its headwaters to Lee Valley Reservoir;
   12. Bear Wallow Creek, from its headwaters to the boundary of the San Carlos Indian Reservation;
   13. North Fork of Bear Wallow Creek, from its headwaters to Bear Wallow Creek;
   14. South Fork of Bear Wallow Creek, from its headwaters to Bear Wallow Creek;

15. Snake Creek, from its headwaters to its confluence with Black River;
17. Hay Creek, from its headwaters to its confluence with the West Fork of the Black River;
18. Stinky Creek, from the Fort Apache Indian Reservation boundary to its confluence with the West Fork of the Black River; and
19. KP Creek, from its headwaters to its confluence with the Blue River.

F. The Department shall hold at least one public meeting in the local area of a nominated unique water to solicit public comment on the nomination.

G. The Director may consider the following factors when making a decision whether to classify a nominated surface water as a unique water:
1. Whether there is the ability to manage the unique water and its watershed to maintain and protect existing water quality;
2. The social and economic impact of Tier 3 antidegradation protection;
3. The public comments in support or opposition to a unique waters classification;
4. The support or opposition of federal and state land management and natural resources agencies to a nomination;
5. Agency resource constraints;
6. The timing of the unique water nomination relative to the triennial review of surface water quality standards;
7. The consistency of a unique water classification with applicable water quality management plans (for example, § 208 water quality management plans); and
8. Whether the nominated surface water is located within a national or state park, national monument, national recreation area, wilderness area, riparian conservation area, area of critical environmental concern, or it has another special use designation (for example, Wild and Scenic River designation).

H. The following water quality standards apply to the listed unique waters. Water quality standards prescribed in this subsection supplement the water quality standards prescribed by this Article.

1. The West Fork of the Little Colorado River, above Government Springs:

Parameter	Standard
pH (standard units)	No change due to discharge
Temperature	No increase due to discharge
Dissolved oxygen	No decrease due to discharge
Total dissolved solids	No increase due to discharge
Chromium (as Cr)(D)	10 µg/L

2. Oak Creek, including the West Fork of Oak Creek:

Parameter	Standard
pH (standard units)	No change due to discharge
Nitrogen (T)	1.00 mg / L (annual mean)
	1.50 mg / L (90th percentile)
	2.50 mg / L (single sample max.)
Phosphorus (T)	0.10 mg/L (annual mean)
	0.25 mg/L (90th percentile)
	0.30 mg/ L (single sample max.)
Chromium (as Cr) (D)	5 µg/L

Turbidity change due to discharge	3 NTUs

3. Peoples Canyon Creek, tributary to the Santa Maria River:

Parameter	Standard
Temperature	No increase due to discharge
Dissolved oxygen	No decrease due to discharge
Turbidity change due to discharge	5 NTUs
Arsenic (T)	20 µg/L
Manganese (T)	500 µg/L

4. Burro Creek, above its confluence with Boulder Creek:

Parameter	Standard
Manganese (T)	500 µg/L

5. Francis Creek, in Mohave and Yavapai counties:

Parameter	Standard
Manganese (T)	500 µg/L

6. Cienega Creek, from its confluence with Gardner Canyon and Spring Water Canyon at R18E T17S to Del Lago Dam, in Pima County:

Parameter	Standard
pH	No change due to discharge
Temperature	No increase due to discharge
Dissolved oxygen	No decrease due to discharge
Total dissolved solids	No increase due to discharge
Turbidity	10 NTUs

7. Bonita Creek, tributary to the Upper Gila River:

Parameter	Standard
pH	No change due to discharge
Temperature	No increase due to discharge
Dissolved oxygen	No decrease due to discharge
Total dissolved solids	No increase due to discharge
Turbidity	15 NTUs

Abbreviations:
"(D)" means dissolved fraction
"(T)" means total recoverable
"NTUs" means nephelometric turbidity units
"mg / L" means milligrams per liter
"µg / L" means micrograms per liter

Historical Note

Adopted effective February 18, 1992 (Supp. 92-1). Amended effective April 24, 1996 (Supp. 96-2). Added "water quality standards" to R18-11-112, previously omitted in error (Supp. 96-3). Amended by final rulemaking at 8 A.A.R. 1264, effective March 8, 2002 (Supp. 02-1).

APPENDIX B

Water Quality Data and Depth to Water Data

Water Quality Data for Davidson Canyon

	6/4/2002		8/2/2002	10/3/2002	1/3/2003	5/8/2003
	Davidson 1 Conc. (mg/L)	Davidson 2 Conc. (mg/L)	Davidson 1 Conc. (mg/L)	Davidson 2 Conc. (mg/L)	Davidson 2 Conc. (mg/L)	Davidson 1 Conc. (mg/L)
Al	ND	ND	ND	ND	ND	ND
Ca	81	93	87	98	96	99
Mg	21	23	20	23	24	25
K	ND	ND	ND	ND	ND	ND
Na	48	45	50	43	49	44
F	0.48	0.52	0.48	0.48	0.64	0.47
Cl	17	19	15	15	15	15
NO3 as N	ND	ND	ND	ND	ND	ND
SO4	79	100	91	92	90	84
Alk as CaCO3	300	290	250	250	340	330
Alk as HCO3	366	354	305	305	415	402
As	ND	ND	ND	ND	ND	ND
SiO2	26	25	29	34	31	28
Lab Cond. (uS)	740	790	600	780	760	770
Lab pH	7.6	7.1	7.7	7.3	7.3	7.2
Lab TDS (mg/L)	420	390	550	470	520	340
Field Cond. (uS)	726.6	794.1	723.3	793	791.3	778.3
Field pH	7.93	7.57	7.88	7.45	7.51	7.39
Field Temp (C)	20.4	23.3	28	19.8	17.6	17.8

ND = not detected

Davidson 1 is located south of I-10, near the unnamed spring at 31° 59' 00" / 110° 38' 46".
Davidson 2 is located near the confluence with Cienega Creek, near the unnamed spring at 32° 00' 54" / 110° 38' 54".

All surface water samples were analyzed by Turner Laboratories.

Turner Laboratories, Inc.

Date: *29-May-03*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	Davidson (DAV 1)
Lab Order:	0305118	**Collection Date:**	5/8/03 9:00:00 AM
Project:	Cienega-Davidson		
Lab ID:	0305118-04A	**Matrix:**	SURFACE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS (DISSOLVED) IN DRINKING WATER		**E200.7**				Analyst: **RAD**
Aluminum	ND	2.0		mg/L	1	5/14/03 12:30:49 PM
Calcium	99	4.0		mg/L	1	5/14/03 12:30:49 PM
Magnesium	25	3.0		mg/L	1	5/14/03 12:30:49 PM
Potassium	ND	5.0		mg/L	1	5/14/03 12:30:49 PM
Sodium	44	10		mg/L	2	5/15/03 5:40:58 PM
ARSENIC (DISSOLVED) BY GFAA		**E200.9**				Analyst: **RAD**
Arsenic	ND	0.0050		mg/L	1	5/27/03 7:22:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Chloride	15	1.0		mg/L	1	5/8/03 6:40:00 PM
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	5/8/03 6:40:00 PM
Sulfate	84	25		mg/L	5	5/9/03 2:25:00 PM
ALKALINITY		**M2320 B**				Analyst: **DV**
Alkalinity, Total (As CaCO3)	330	1.0		mg/L CaCO3	1	5/12/03 10:00:00 AM
CONDUCTIVITY		**M2510 B**				Analyst: **DV**
Conductivity	770	0.10		umhos/cm	1	5/12/03 5:00:00 PM
FLUORIDE		**M4500FC**				Analyst: **DV**
Fluoride	0.47	0.10		mg/L	1	5/13/03 8:00:00 AM
PH		**E150.1**				Analyst: **DV**
pH	7.2	0		pH units	1	5/8/03 5:00:00 PM
SILICA (NOT DIGESTED)		**M4500-SI D**				Analyst: **DV**
Silica	28	0.50		mg/L	5	5/12/03 1:00:00 PM
TOTAL DISSOLVED SOLIDS		**M2540 C**				Analyst: **DV**
Total Dissolved Solids (Residue, Filterable)	340	20		mg/L	1	5/9/03 12:00:00 PM

Qualifiers:

ND - Not Detected at or above the PQL	PQL - Practical Quantitation Limit
J - Analyte detected below quanititation limits	S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank	R - RPD outside accepted recovery limits
* - Value exceeds Maximum Contaminant Level	E - Value above quantitation range

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Turner Laboratories, Inc.

Date: *27-Jan-03*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	Davidson (DAV 2)
Lab Order:	0301016	**Collection Date:**	1/3/03 1:50:00 PM
Project:	Cienega- Davidson		
Lab ID:	0301016-04A	**Matrix:**	SURFACE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS (DISSOLVED) IN DRINKING WATER		**E200.7**				Analyst: **RAD**
Aluminum	ND	2.0		mg/L	1	1/10/03 1:41:04 PM
Calcium	96	4.0		mg/L	1	1/10/03 1:41:04 PM
Magnesium	24	3.0		mg/L	1	1/10/03 1:41:04 PM
Potassium	ND	5.0		mg/L	1	1/10/03 1:41:04 PM
Sodium	49	10		mg/L	2	1/15/03 9:59:26 AM
ARSENIC (DISSOLVED) BY GFAA		**E200.9**				Analyst: **RAD**
Arsenic	ND	0.0050		mg/L	1	1/13/03 11:48:00 AM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **TAR**
Chloride	15	1.0		mg/L	1	1/8/03 12:42:00 AM
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	1/3/03 5:07:00 PM
Sulfate	90	50		mg/L	10	1/8/03 7:36:00 PM
ALKALINITY		**M2320 B**				Analyst: **DV**
Alkalinity, Total (As CaCO3)	340	1.0		mg/L CaCO3	1	1/8/03 4:00:00 PM
CONDUCTIVITY		**M2510 B**				Analyst: **DV**
Conductivity	760	0.10		umhos/cm	1	1/7/03 12:00:00 PM
FLUORIDE		**M4500FC**				Analyst: **DV**
Fluoride	0.64	0.10		mg/L	1	1/7/03 12:00:00 PM
PH		**E150.1**				Analyst: **DV**
pH	7.3	0		pH units	1	1/3/03 5:00:00 PM
SILICA (NOT DIGESTED)		**M4500-SI D**				Analyst: **DV**
Silica	31	0.50		mg/L	5	1/8/03 3:00:00 PM
TOTAL DISSOLVED SOLIDS		**M2540 C**				Analyst: **DV**
Total Dissolved Solids (Residue, Filterable)	520	20		mg/L	1	1/9/03 10:00:00 AM

Qualifiers:

ND - Not Detected at or above the PQL	PQL - Practical Quantitation Limit
J - Analyte detected below quanititation limits	S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank	R - RPD outside accepted recovery limits
* - Value exceeds Maximum Contaminant Level	E - Value above quantitation range

Turner Laboratories, Inc. Date: 21-Oct-02

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	DAV~~X~~ 2
Lab Order:	0210071	**Collection Date:**	10/3/02 9:20:00 AM
Project:	Cienega-Davidson		
Lab ID:	0210071-04A	**Matrix:**	SURFACE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS (DISSOLVED) IN DRINKING WATER		**E200.7**				Analyst: **RAD**
Aluminum	ND	2.0		mg/L	1	10/9/02 5:53:43 PM
Calcium	98	4.0		mg/L	1	10/9/02 5:53:43 PM
Magnesium	23	3.0		mg/L	1	10/9/02 5:53:43 PM
Potassium	ND	5.0		mg/L	1	10/9/02 5:53:43 PM
Sodium	43	25		mg/L	5	10/10/02 4:10:34 PM
ARSENIC (DISSOLVED) BY GFAA		**E200.9**				Analyst: **RAD**
Arsenic	ND	0.0050		mg/L	1	10/7/02 4:35:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **TAR**
Chloride	15	1.0		mg/L	1	10/3/02 5:05:00 PM
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	10/3/02 5:05:00 PM
Sulfate	92	25		mg/L	5	10/4/02 3:09:00 PM
ALKALINITY		**M2320 B**				Analyst: **DV**
Alkalinity, Total (As CaCO3)	250	1.0		mg/L CaCO3	1	10/14/02 12:00:00 PM
CONDUCTIVITY		**M2510 B**				Analyst: **DV**
Conductivity	760	0.10		umhos/cm	1	10/8/02 1:00:00 PM
FLUORIDE		**M4500FC**				Analyst: **DV**
Fluoride	0.48	0.10		mg/L	1	10/15/02 2:00:00 PM
PH		**E150.1**				Analyst: **DV**
pH	7.3	0		pH units	1	10/3/02 5:00:00 PM
SILICA (NOT DIGESTED)		**M4500-SI D**				Analyst: **DV**
Silica	34	0.50		mg/L	5	10/9/02 5:00:00 PM
TOTAL DISSOLVED SOLIDS		**M2540 C**				Analyst: **DV**
Total Dissolved Solids (Residue, Filterable)	470	20		mg/L	1	10/9/02 10:30:00 AM

Qualifiers:

ND - Not Detected at or above the PQL	PQL - Practical Quantitation Limit
J - Analyte detected below quanititation limits	S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank	R - RPD outside accepted recovery limits
* - Value exceeds Maximum Contaminant Level	E - Value above quantitation range

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Turner Laboratories, Inc. Date: 23-Aug-02

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	Davidson (DAV 1)
Lab Order:	0208023	**Collection Date:**	8/2/02 1:20:00 PM
Project:	Cienega-Davidson		
Lab ID:	0208023-04A	**Matrix:**	SURFACE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS (DISSOLVED) IN DRINKING WATER		**E200.7**				Analyst: **RAD**
Aluminum	ND	2.0		mg/L	1	8/7/02 5:01:16 PM
Calcium	87	8.0		mg/L	2	8/17/02 1:51:09 PM
Magnesium	20	3.0		mg/L	1	8/7/02 5:01:16 PM
Potassium	ND	5.0		mg/L	1	8/7/02 5:01:16 PM
Sodium	50	10		mg/L	2	8/17/02 1:51:09 PM
ARSENIC (DISSOLVED) BY GFAA		**E200.9**				Analyst: **RAD**
Arsenic	ND	0.0050		mg/L	1	8/15/02 1:38:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **TAR**
Chloride	15	5.0		mg/L	5	8/14/02 6:24:00 PM
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	8/2/02 5:43:00 PM
Sulfate	91	25		mg/L	5	8/14/02 6:24:00 PM
ALKALINITY		**M2320 B**				Analyst: **DV**
Alkalinity, Total (As CaCO3)	250	1.0		mg/L CaCO3	1	8/7/02 3:00:00 PM
CONDUCTIVITY		**M2510 B**				Analyst: **DV**
Conductivity	600	0.10		umhos/cm	1	8/12/02 11:00:00 AM
FLUORIDE		**M4500FC**				Analyst: **DV**
Fluoride	0.48	0.10		mg/L	1	8/13/02 10:00:00 AM
PH		**E150.1**				Analyst: **DV**
pH	7.7	0		pH units	1	8/2/02 5:00:00 PM
SILICA (NOT DIGESTED)		**M4500-SI D**				Analyst: **KGB**
Silica	29	0.50		mg/L	5	8/5/02
TOTAL DISSOLVED SOLIDS		**M2540 C**				Analyst: **DV**
Total Dissolved Solids (Residue, Filterable)	550	20		mg/L	1	8/8/02 2:00:00 PM

Qualifiers:
- ND - Not Detected at or above the PQL
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- PQL - Practical Quantitation Limit
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range

Turner Laboratories, Inc. Date: *14-Jun-02*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	Davidson 2
Lab Order:	0206050	**Collection Date:**	6/4/02 11:00:00 AM
Project:	Cienega CK - Davidson		
Lab ID:	0206050-02A	**Matrix:**	SURFACE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS (DISSOLVED) IN DRINKING WATER		**E200.7**				Analyst: **RAD**
Aluminum	ND	2.0		mg/L	1	6/5/02 5:47:45 PM
Calcium	93	4.0		mg/L	1	6/5/02 5:47:45 PM
Magnesium	23	3.0		mg/L	1	6/5/02 5:47:45 PM
Potassium	ND	5.0		mg/L	1	6/5/02 5:47:45 PM
Sodium	45	10		mg/L	2	6/6/02 12:29:26 PM
ARSENIC (DISSOLVED) BY GFAA		**E200.9**				Analyst: **RAD**
Arsenic	ND	0.0050		mg/L	1	6/5/02 12:34:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **TAR**
Chloride	19	1.0		mg/L	1	6/4/02 4:49:00 PM
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	6/4/02 4:49:00 PM
Sulfate	100	25		mg/L	5	6/5/02 10:55:00 AM
ALKALINITY		**M2320 B**				Analyst: **DV**
Alkalinity, Total (As CaCO3)	290	1.0		mg/L CaCO3	1	6/5/02 2:00:00 PM
CONDUCTIVITY		**M2510 B**				Analyst: **DV**
Conductivity	790	0.10		umhos/cm	1	6/5/02 4:00:00 PM
FLUORIDE		**M4500FC**				Analyst: **DV**
Fluoride	0.52	0.10		mg/L	1	6/6/02 4:00:00 AM
PH		**E150.1**				Analyst: **DV**
pH	7.1	0		pH units	1	6/4/02 5:00:00 PM
SILICA (NOT DIGESTED)		**M4500-Si D**				Analyst: **KGB**
Silica	25	0.50		mg/L	5	6/6/02 3:00:00 PM
TOTAL DISSOLVED SOLIDS		**M2540 C**				Analyst: **DV**
Total Dissolved Solids (Residue, Filterable)	390	20		mg/L	1	6/5/02 5:00:00 AM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

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Turner Laboratories, Inc.

Date: 14-Jun-02

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	Davidson 1
Lab Order:	0206050	**Collection Date:**	6/4/02 8:15:00 AM
Project:	Cienega CK - Davidson		
Lab ID:	0206050-01A	**Matrix:**	SURFACE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS (DISSOLVED) IN DRINKING WATER		**E200.7**				Analyst: **RAD**
Aluminum	ND	2.0		mg/L	1	6/5/02 5:42:45 PM
Calcium	81	4.0		mg/L	1	6/5/02 5:42:45 PM
Magnesium	21	3.0		mg/L	1	6/5/02 5:42:45 PM
Potassium	ND	5.0		mg/L	1	6/5/02 5:42:45 PM
Sodium	48	10		mg/L	2	6/6/02 12:24:42 PM
ARSENIC (DISSOLVED) BY GFAA		**E200.9**				Analyst: **RAD**
Arsenic	ND	0.0050		mg/L	1	6/5/02 12:16:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **TAR**
Chloride	17	1.0		mg/L	1	6/4/02 3:12:00 PM
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	6/4/02 3:12:00 PM
Sulfate	79	25		mg/L	5	6/4/02 6:57:00 PM
ALKALINITY		**M2320 B**				Analyst: **DV**
Alkalinity, Total (As CaCO3)	300	1.0		mg/L CaCO3	1	6/5/02 2:00:00 PM
CONDUCTIVITY		**M2510 B**				Analyst: **DV**
Conductivity	740	0.10		umhos/cm	1	6/5/02 4:00:00 PM
FLUORIDE		**M4500FC**				Analyst: **DV**
Fluoride	0.48	0.10		mg/L	1	6/6/02 4:00:00 AM
PH		**E150.1**				Analyst: **DV**
pH	7.6	0		pH units	1	6/4/02 5:00:00 PM
SILICA (NOT DIGESTED)		**M4500-SI D**				Analyst: **KGB**
Silica	26	0.50		mg/L	5	6/6/02 3:00:00 PM
TOTAL DISSOLVED SOLIDS		**M2540 C**				Analyst: **DV**
Total Dissolved Solids (Residue, Filterable)	420	20		mg/L	1	6/5/02 5:00:00 AM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Depth to Water Data for Davidson Canyon

Davidson #2 Well		
Date	**wl elev (ft)**	**dtw (ft)**
12/22/81	3441	15.8
12/03/87	3436	20.7
08/01/89	3440	17.2
09/07/89	3439	17.9
10/04/89	3438	18.8
11/06/89	3439	17.7
12/06/89	3439	18.3
01/03/90	3439	18.4
02/01/90	3438	18.8
03/01/90	3438	18.8
04/04/90	3437	20.0
05/03/90	3436	21.0
06/04/90	3435	22.1
07/03/90	3434	22.6
07/11/90	3439	17.9
08/01/90	3443	13.6
09/05/90	3445	12.0
10/04/90	3442	15.4
05/06/91	3444	13.2
01/02/92	3438	18.7
07/07/92	3434	23.4
12/02/92	3434	22.6
02/05/93	3442	14.5
03/01/93	3442	15.0
04/07/93	3440	16.8
05/04/93	3438	18.5
06/04/93	3437	20.4
07/06/93	3435	21.7
08/02/93	3435	21.7
09/01/93	3440	17.5
10/07/93	3438	18.7
11/04/93	3432	24.9
12/07/93	3441	16.2
01/11/94	3444	13.2
02/02/94	3445	12.5
03/03/94	3444	12.8
04/06/94	3443	14.2
05/04/94	3440	17.1
06/02/94	3437	19.8
03/03/04	3437	20.3

All measurements taken by PAG staff.
All depth to water (dtw) values are depths below land surface.

Appendix C

Photographs and Field Notes

Davidson Canyon near the spring south of I-10 (looking upstream). Photograph by Gloria Browne, November 2004.

Davidson Canyon Creek, near spring south of I-10. Photograph by Linwood Smith, January 2004.

Davidson Canyon near spring south of I-10. Photograph by Linwood Smith, January 2004.

Instream pool in Davidson Canyon near spring south of I-10. Photograph by Linwood Smith, January 2004.

Series of photos showing streamflow and the hazards of ORV use in Davidson Canyon. Notice the dead lowland leopard frog (left). Photographs by Dennis Caldwell, February 2003.

PIMA COUNTY
DEPARTMENT OF TRANSPORTATION & FLOOD CONTROL DISTRICT
Flood Control Planning & Development Division
201 N. Stone Avenue, 4th Floor
Tucson, Arizona 85701-1207

FAX TRANSMITTAL FORM

TO: Mike Block Greg Hess

FAX NUMBER: 575-8454 620-6981

FROM: Julia Fonseca

DIVISION: PCFCD

(520) 740-6350 FAX (520) 740-6749

DATE: May 20

SUBJECT: Davidson Canyon

COMMENTS:

NO. OF PAGES INCLUDING THIS TRANSMITTAL SHEET: 3.

Davidson Canyon Field Trip Notes
Julia Fonseca
May 19, 1996

This visit in the company of Greg Hess and Mike Block.

Our access: from Old Sonoita Highway, turn onto unlocked powerline road and head east. Turn NW onto intersecting powerline and proceed until the gas line road intersection, at which point one proceeds east to Davidson Canyon. We parked in T16S, R17E, S31 adjacent to the gage station. We walked upstream from this point after Greg fixed his flat tire.

Purpose: We wished to determine whether this portion of Davidson Canyon could be characterized as ephemeral. ADEQ's use-attainability analysis referred to my having called the Davidson Canyon "ephemeral in its entirety", however David Parizek, a nearby resident, referred to a spring which contains fish. David has not observed this spring to desiccate. Mike Block is the only one of us who has walked this part of Davidson Canyon before, and he never recalls seeing fish.

The channel at the gage is broad and sandy, with a few annual plants on sand bars. Vegetation bordering the stream includes mature ash, hackberry, tamarisk, mesquite and Goodding willow trees, as well as seepwillow. A nearby well, which Mike used to monitor, is located on the terrace opposite the gage, approximately 8 to 10 above the thalweg of the channel. The casing is another 1 to 2 feet higher. Water is visible. I recall estimates of roughly 15 feet to water from Mike's reports.

Walking upstream a few tenths of a mile, the channel narrows and dried algae is present as a crust on the stream sediment, indicating flow earlier this year. Seepwillow and rabbitfoot grass are abundant. At this location, there are vertical beds of rock flanking the streambed, but no bedrock is visible in the channel. Tree roots about 1/2 to 1/4 inch in diameter at a level of about 1 foot above the present channel indicate that saturated soils were present for a duration long enough to allow the roots to establish.

At another bedrock "fin" we find moist soil, monkeyflower, centaury, watercress and dried algae. Young ash and willow are present as well as seepwillows, and mature ash and willow. Closely-grazed deergrass is also an abundant streamside plant. Given how dry this winter has bee[illegible] to mention the preceding summer, finding moist soil i[illegible] season is surprising.

Approximately 0.1 mile downstream of the powerl[illegible] crossings, at a bedrock outcrop in the streambed, [illegible] flowing water. The flow is more than 1 gallon per [illegible] and possibly less than 5 gallons per minute. Floating [illegible] watercress are abundant, as are closely cropped

[illegible]ish are also abundant here. The size and color of the [illegible] vary from small, dark fish less than 1 inch long [illegible] brown fish several inches long with a single dark [illegible] We also saw a belastomatid bug sucking the juice o[illegible] of [illegible] caddisfly lar[illegible]ae, a mature dragonfly, and a fat gart[illegible] perhaps two feet long. We saw no tadpoles or ma[illegible] but a plopping sound may indicate frogs are present. Mike took several photographs of this area. A few mortars [illegible] bedrock outcrop show this area has been important [illegible] people for a long time.

U[illegible]tream of the powerline are more ash, willow and a number of large arrowweed shrubs. Mature riparian trees show evidence of die-back from previous years. We turned arou[illegible] in the vicinity of the boundary between sections 6 and [illegible] of Township 17 South, Range 17 East, where there are few riparian-obligate trees and the stream bed broadens.

PIMA ASSOCIATION OF GOVERNMENTS
FIELD NOTES

Date: 12/15/99

Project: SDCP Stream Project

Greg Hess
Stanfan Schorr

Davidson Canyon

* We drove down powerline road from Old Sonoita Hwy. Davidson creek was flowing across road at creek crossing. Surprizing to both of us. T17 R17 Sec 6 - just south of center of section. Flow was slightly channelized and lined with algae. Many ATV tracks in stream channel.

→ Upstream of road crossing:
Walked approx. 0.5 mile upstream.
Observed interrupted flow.
- algae lined, slight channelized to broad
- some braiding
End of flow at section line between Sect. 6 + 7 in T 17 R17
- Riparian vegetation: ash, willow, seepwillow

→ Downstream of road crossing:
Walked approx 0.5 mile downstream
Observed considerable flow :: continuous
~ 5 gpm ?
Scoured + downcut channel : presumably from July monsoons
Lots of fish in stream + deep, clear pools
↳ pools located next to bedrock "fins" at each bend in creek
- We turned around after last downstream bend in creek.
↳ still good flow

From: Julia.Fonseca@dot.pima.gov
To: ghess@pagnet.org, sschorr@pagnet.org, jean.emery@parks.pima.gov,
Christine.Curtis@pw.pima.gov
Subject: FW Davidson
Date: Mon, 3 Jan 2005 15:46:22 -0700
X-Mailer: Internet Mail Service (5.5.2653.19)
X-Server: LogSat Software SMTP Server
X-SF-RX-Return-Path: <Julia.Fonseca@dot.pima.gov>

-----Original Message-----
From: Smith, E Linwood [mailto:LSmith@epgaz.com]
Sent: Monday, January 03, 2005 3:37 PM
To: Julia.Fonseca@dot.pima.gov
Subject: RE: Davidson

Julia,

The majority of Davidson Canyon was dry when I was there in January 2004. However, the spring in Section 8 (northern parcel) was flowing and there was water intermittently in the channel all the way from the spring to just above the bridge on I-10. I did see the stock tank (Figure 16 in my report) but did not realize it was capturing water via man-made channel from Davidson canyon - not as easy to see on the ground as from the air! I think the presence of fish and all the other aquatic features in the northern parcel, in the middle of a drought, argues pretty strongly for a perennial designation.

Happy New Year!

Linwood

APPENDIX D

PAG Streams Inventory Report
(selected pages)

SONORAN DESERT CONSERVATION PLAN

GIS Coverage Of Perennial Streams

Intermittent Streams

and

Areas of Shallow Groundwater

FINAL PROJECT REPORT

January 2000

Prepared by Pima Association of Governments for Pima County

Criteria for Including a Location

For a stream reach to be included in the coverage, PAG required reliable documentation that the location met the definition of perennial or intermittent. Reliable documentation included: reports, databases, studies, and maps from reputable sources; aerial photographs; first-hand knowledge of members of the Technical Advisory Committee; field notes; and personal, direct observations. The Technical Advisory Committee recommended that a "minimum map unit" (i.e., a minimum length of flow necessary to be included in the coverage) not be established. Instead, all areas meeting the criteria were included in the coverage, regardless of their sizes. A separate springs coverage already existed for Pima County, and it was not necessary to duplicate the springs coverage for this project. However, if PAG obtained evidence of surface flow at a spring, the site was included in the appropriate coverage.

In many cases, documentation on a particular reach was fairly limited, particularly with respect to the upstream and downstream limits of flow, which can vary substantially from season to season and from year to year. In addition, some reaches had conflicting information as to whether they were perennial or intermittent. With the recommendation of the Technical Advisory Committee, PAG decided to be fairly "liberal" in delineating intermittent reaches, in order to err on the side of not missing a reach worthy of protection, but fairly "conservative" in designating a stream as perennial. The conservative approach to perennial streams was chosen in response to concerns that, if one stream was incorrectly identified as perennial, then the integrity of the entire perennial coverage could be questioned by future users. A "level of certainty" field (1 = low, 3 = high) was also included in the streams and shallow groundwater databases as an aid to users of the data. The criteria for certainty, defined in Table 1, were generally followed, although flexibility was necessary, given that the criteria were somewhat subjective, and that many sites did not clearly fall within one of the categories.

Table 1. Criteria for Assigning a Certainty Level to Database Records

Streams

Level 3 -- HIGH CERTAINTY. At least one very reliable source with specific site information, including location, stream flow measurements and observations, and vegetation inventory. Stream reach easily categorized using available information.

Level 2 -- MODERATE CERTAINTY. At least one source with site information, including location, stream flow observations, and vegetation inventory. Some information may be missing, questionable, or not specific. Stream reach categorized with minimal difficulty using available information.

Level 1 -- LOW CERTAINTY. One source with questionable site information. Stream reach not easily categorized using available information.

RESULTS AND DISCUSSION

Perennial and Intermittent Streams Identified

The perennial streams and intermittent streams identified in Pima County for this project are shown on Tables 3 and 4, respectively, and together on Figure 1 (for eastern Pima County only). The streams are also listed in Appendices E and F, along with selected information from the databases. Fifty-five perennial stream reaches and eighty-two intermittent stream reaches on a total of 74 different streams were identified.

Table 3. Perennial Streams in Pima County.

Apache Spring	Montosa Canyon
Arivaca Creek	Nogales Spring
Bingham Cienega	Posta Quemada
Buchman Canyon (3 reaches)	Quitobaquito (Pond and Springs)
Bullock Canyon	Romero Canyon
Canada del Oro	Ruelas Canyon
Cienega Creek (9 reaches)	Sabino Creek (3 reaches)
Cinco Canyon	San Pedro River (2 reaches)
Davidson Canyon	Santa Cruz River (effluent dependent)
Edgar Canyon	Scholefield Spring
Empire Gulch (2 reaches)	Simpson Spring
Espiritu Canyon	Tanque Verde (upper)
Honey Bee Canyon	Wakefield Canyon (4 reaches)
Lemmon Creek	Wild Burro Canyon (5 reaches)
Little Nogales Spring	Wild Cow Spring
Mattie Canyon	Youtcy Canyon (2 reaches)

Table 4. Intermittent Streams in Pima County.

Agua Verde Creek	Madera Canyon
Alder Canyon	Madrona Canyon
Arivaca Creek	Mattie Canyon
Ash Creek	Miller Creek
Atchley Canyon	Molino Canyon
Barrel Canyon	Mud Spring Canyon
Bear Canyon (2 reaches)	Paige Creek (2 reaches)
Bear Creek	Palisade Canyon Creek
Bootlegger Spring	Peck Basin
Box Canyon	Pima Canyon
Brown Canyon	Rincon Creek
Buehman Canyon (2 reaches)	Romero Canyon (2 reaches)
Bullock Canyon (3 reaches)	Rose Canyon Creek
Canada Agua	Sabino Canyon
Canada del Oro	San Pedro River (3 reaches)
Cargodera Canyon	Santa Cruz River
Chiminea Canyon	Smitty Spring
Chimney Canyon	Soldier Canyon
Cienega Creek (8 reaches)	Sutherland Wash
Davidson Canyon (3 reaches)	Sycamore Canyon
Deer Creek	Tanque Verde Creek (5 reaches)
Distillery Canyon	Thomas Canyon
East Fork Sabino Canyon	Turkey Creek
Espiritu Canyon	Unnamed Spring
Finger Rock Canyon	Unnamed tributary to Ash Creek
Florida Canyon	Ventana Canyon (3 reaches)
Gardner Canyon	Wakefield Canyon
Geesaman Wash	West Fork Sabino Creek
La Milagrosa Canyon	Youtcy Canyon (2 reaches)

Information Available for Perennial and Intermittent Streams

Most of the stream reaches identified in this project had fairly limited documentation available to identify the upstream and downstream limits of flow. Appendix G includes descriptions of the information used, and the basis for deciding where to define these limits, for each perennial and intermittent stream. For many of the stream reaches, very little information was available to verify the presence and location of flow. This was particularly true of the intermittent reaches; 10% of the intermittent reaches were level-1 certainty, 64% were level 2, and 26% were level 3. The perennial streams had better documentation; only three of the 55 (<6%) were level-1 certainty, 36% were level 2, and 58% were level 3. The perennial and intermittent streams with the least information available (i.e., level-1 certainty) are listed on Table 5. The certainty levels for all the streams are included in Appendices E and F, and are shown for streams in eastern Pima County on Figures 2 and 3.

Perennial Stream Coverage

Perennial Stream Reach	Cadastral Location	USGS Topographic Map	Certainty
Apache Spring	18-18-27	Apache Peak, Ariz.	1
Arivaca Creek	21-10-20,27,28,29,34	Arivaca, Ariz.	3
Bingham Cienega	11-18-22	Redington, Ariz.	3
Buchman Canyon	12-18-4,5,6,7,8,18	Buchman Canyon, Ariz.	3
Buchman Canyon	12-18-4,5,6,7,8,18	Buchman Canyon, Ariz.	3
Buchman Canyon	12-17-13,14,24	Buchman Canyon, Ariz.	3
Bullock Canyon	12-17-24	Piety Hill, Ariz., Buehman Canyon, Ariz.	2
Canada del Oro	11-15-15,22,27	Mt. Lemmon, Ariz.	2
Cienega Creek (lower)	16-16-14,23,24/16-17-19,20,28,29,30,34,35	Vail; The Narrows; Rincon Peak, Ariz.	3
Cienega Creek (lower)	16-16-14,23,24/16-17-19,20,28,29,30,34,35	Vail; The Narrows; Rincon Peak, Ariz.	3
Cienega Creek (lower)	16-16-14,23,24/16-17-19,20,28,29,30,34,35	Vail; The Narrows; Rincon Peak, Ariz.	3
Cienega Creek (lower)	16-16-14,23,24/16-17-19,20,28,29,30,34,35	Vail; The Narrows; Rincon Peak, Ariz.	3
Cienega Creek (lower)	16-16-14,23,24/16-17-19,20,28,29,30,34,35	Vail; The Narrows; Rincon Peak, Ariz.	3
Cienega Creek (lower)	16-16-14,23,24/16-17-19,20,28,29,30,34,35	Vail; The Narrows; Rincon Peak, Ariz.	3
Cienega Creek (upper)	19-17-3,10,14,15	Spring Water Canyon, Ariz.	3
Cienega Creek (upper)	18-17-12,13,14,23/18-18-6,7	Spring Water Canyon, Ariz.; The Narrows, Ariz.	3
Cienega Creek (upper)	18-17-12,13,14,23/18-18-6,7	Spring Water Canyon, Ariz.; The Narrows, Ariz.	3
Cinco Canyon	19-17-14	Spring Water Canyon, Ariz.	3
Davidson Canyon	17-17-6	Mount Fagen, Ariz.	3
Edgar Canyon	11-18-29,30	Buehman Canyon, Ariz.	3

Intermittent Stream Reach	Cadastral Location	USGS Topographic Map	Certainty
Chimney Canyon	16-17-1,12/16-18-6	Rincon Peak, Ariz.	2
Cienega Creek (upper)	18-18-6	The Narrows, Ariz.	3
Cienega Creek (upper)	18-17-23,26,34,35/19-17-3	Spring Water Canyon, Ariz.	3
Cienega Creek(lower)	16-16-14,23,24/16-17-19,20,28,29,30,34,35	Vail; The Narrows; Rincon Peak, Ariz.	3
Cienega Creek(lower)	16-16-14,23,24/16-17-19,20,28,29,30,34,35	Vail; The Narrows; Rincon Peak, Ariz.	3
Cienega Creek(lower)	16-16-14,23,24/16-17-19,20,28,29,30,34,35	Vail; The Narrows; Rincon Peak, Ariz.	3
Cienega Creek(lower)	16-16-14,23,24/16-17-19,20,28,29,30,34,35	Vail; The Narrows; Rincon Peak, Ariz.	3
Cienega Creek(lower)	16-16-14,23,24/16-17-19,20,28,29,30,34,35	Vail; The Narrows; Rincon Peak, Ariz.	3
Cienega Creek(lower)	16-16-14,23,24/16-17-19,20,28,29,30,34,35	Vail; The Narrows; Rincon Peak, Ariz.	3
Davidson Canyon	17-16-31	Mount Fagan, Ariz.	2
Davidson Canyon	16-17-30	Vail, Ariz.	3
Davidson Canyon	17-17-6	Mount Fagan, Ariz.	2
Deer Creek	14-18-23	Happy Valley, Ariz.	1
Distillery Canyon	16-18-5,7,8	Rincon Peak, Ariz.	2
East Fork Sabino Canyon	12-15-25,26	Sabino Canyon, Ariz.	1
Espiritu Canyon	13-18-22,27	Soza Canyon, Ariz.	2
Finger Rock Canyon	12-14-34	Tucson North, Ariz.	3
Florida Canyon	19-15-19,30,31,32	Mt. Wrightson; Helvetia, Ariz.	3
Gardner Canyon	19-17-10,15	Spring Water Canyon, Ariz.	3
Geesaman Wash	11-16-15	Mount Bigelow, Ariz.	1
La Milagrosa Canyon	13-16-16	Agua Caliente Hill, Ariz.	1
Madera Canyon	19-14-35	Mt Hopkins, Ariz.	2

and the reference information. No other source of information was available for this reach.

Davidson Canyon

Davidson Canyon was determined to have both perennial and intermittent flow based on field observations by several sources. Field visits by Julia Fonseca, Mike Block, and Greg Hess in May 1996 and Greg Hess and Staffan Schorr in December 1999 documented a perennial reach upstream of the I-10 crossing. Two species of fish were observed in flowing water at a bedrock outcrop in May 1996. Descriptive text of Fonseca, Block, and Hess's field observations, including location information on beginning and end of flow, was provided. Hess and Schorr visited the site and observed flow and large pools with many fish (notes provided). PAG staff monitored flow extent at locations near the I-10 crossing from 1989 to 1994. Davidson Canyon does not have surface flow downstream of I-10 until intermittent flow surfaces near the Cienega Creek confluence. This reach of intermittent flow has been monitored by PAG since 1993. No documentation of flow was available for the upper portions of Davidson Canyon.

Deer Creek

Deer Creek was determined to have intermittent flow based on a USFS RASES survey conducted in September 1998. Flow was not documented, however frogs were observed. Initially, the length of this intermittent reach was arbitrarily drawn as the length of the creek that crosses the Section which the USFS RASES survey was conducted (i.e., beginning of flow at the west edge and end of flow at east edge of Section 23). However, Bob Lefevre of the U.S. Forest Service suggested that if flow existed in a steep portion of a canyon, then flow would probably exist until the topography flattens out. The USGS topographic map showed that the canyon's steep topography continued downstream to the county line. This suggested that flow would most likely continue to at least that location. Therefore, end of flow was extended to the location where topography flattened out. Very little documentation was available for this creek.

Distillery Canyon

Distillery Canyon was determined to have intermittent flow based on a USFS RASES survey conducted November 1998. Flow was observed at the time of the survey. Beginning of flow was based on locations of springs along the creek as shown on the Rincon Peak USGS 7.5 Minute topographic map. Originally, end of flow was drawn at the National Forest Boundary due to the lack of documentation downstream of that location. However, additional information provided by various people who attended a meeting for the Sonoran Desert Conservation Plan Steering Committee gave evidence that intermittent flow would continue to Agua Verde Creek. No other sources of stream flow information were available for this canyon.

East Fork Sabino Canyon

East fork Sabino Canyon was determined to have intermittent flow based on personal field notes provided by Staffan Schorr. Moist soil and pools were present in November 1999. No further documentation was available for this canyon.

Edgar Canyon

A portion of Edgar Canyon was determined to have perennial flow based on field observations by PAG staff. PAG staff conducted quarterly water quality sampling in this portion of Edgar Canyon in 1999. Personal field notes from October 1999 provided by Cheryl Karrer confirmed the beginning and end of perennial flow. This portion of Edgar

APPENDIX E

Plant Lists

Annotated Floristic Checklist for Davidson Canyon, Pima Co., AZ
(compiled by Janice Parizek, University of Arizona)

Included in the following checklist are about 36 families and 79 species. I collected specimens for each plant on this list unless I felt that collection would be detrimental to the plant population or unless collection of a particular species would have been illegal. Rare means that the species was observed in less than three localities within the canyon. Common means that the species is dominate in its microhabitat and that microhabitat is encountered more than seven times in the canyon. Occasional means that the species was observed between four and seven times in different microhabitat localities. Each species is also described as native or introduced.

PINOPHYTA (Gymnosperms)

Ephedraceae (Ephedra Family)
Ephedra trifurca Torrey. Long-leaved Joint-fir. Occasional. Spring. Native.

Cupressaceae (Cypress Family)
Juniperus deppeana Steud. Alligator Juniper. Common on slopes. Native.
Juniperus monosperma (Engelm.) Sarg. One-seeded Juniper. (Most current is *J. coahuilensis.*) Common. Native.

MAGNOLIOPHYTA (Flowering Plants)
MAGNOLIOPSIDA (DICOTS)

Anacardiaceae (Family)*
Rhus microphyllum Engelm. Little Leaf Desert Sumac. Occasional. Spring. Native.

Apiaceae (Carrot Family)
Bowlesia incana Ruiz & Pavon. Hairy Bowlesia. Common. February to May. Native.
Daucus pusillus Michx. American Carrot. Common. March to May. Native.

Asteraceae (Sunflower Family)
Artemesia ludoviciana Nutt. Sagebrush. Occasional. August to November. Native.
Baccharis salicifolia R. & Pers. (*B. glutinosa* in Kearney & Peebles, 1960) Seep-willow. Common. March to December. Native.
Bahia absinthifolia Benth. var *dealbata* Gray. Common. Spring-fall. Native.
Baileya multiradiata Harv. & Gray. Desert Marigold.Occasional. Spring-fall. Native.
Brickellia coulteri Gray Brickellia. Common. March to November. Native.
Cirsium neomexicanum Gray. Mexican Thistle. Common. March to September. Native.
Dyssodia pentachaeta (DC.) Robbins. Common. March to October. Native.
Erigeron divergens Torr. & Gray. Spreading Fleabane. Common. February to October. Native.
Isocoma tenuisecta (Greene) Blake. Burroweed. Common. August to October. Native.
Melanpodium leucanthum Torr. & Gray. Plains Blackfoot. Occasional. March to November. Native.

Parthenium incanum H.B.K. Mariola. Occasional. June to October. Native.
Psilostrophe cooperi (Gray) Greene. Paperflower. Common. Flower throughout the year with rain. Native.
Rafinesquia neomexicana Gray. Desert Chicory. Common. February to July. Native.
Zinnia acerosa (D.C.) Grey. (Z. pumilla in Kearney & Peebles, 1960). April to October. Native.

Boraginaceae (Borage Family)
Amsinkia intermedia Fisch. & Mey. Coast Fiddleneck. Common. March to May. Native.

Brassicaceae (Mustard Family)
Descurainia pinnata (Walt.) Britton. Yellow Tansy Mustard. Common. March-April at this elevation. Native.
Rorippa nasturtium-aquaticum (L.) Schinz & Thell. Common in semipermanent pool. April to August. Introduced from Europe and naturalized throughout most of North America.
Streptanthus carinatus Wright. Twist Flower. Occasional. January to April. Native.

Cactaceae (Cactus Family)
Cereus giganteus Engelm. Sahuaro. May to June. Native.
Ferocactus wislizenii (Engelm.) Britton & Rose. Fishhook Barrel. Occasional. September and October. Native.
Mammillaria gummifera Engelm. var. *macdougalii* (Rose) L. Benson. Rare. March and April. Native.
Mammalaria microcarpa Engelm. Growing on rocky, gravelly slopes. Occasional. Native.

Ulmaceae (Elm Family)
Celtis pallida Torr. Desert Hackberry. Flowers after summer rains. Native.
Celtis reticulata Torr. Netleaf Hackberry. Common. Flowers after summer rains. Native.

Cucurbitaceae (Cucumber Family)
Marah gilensis Greene. Wild Cucumber. Perennial vine. Occasional. Native.

Fabaceae (Bean Family)
Acacia constricta Benth. White-thom Acacia. Occasional. May to August. Native.
Astragalus arizonicus Gray. Milkvetch. Occasional in canyon bottoms and common on flats above. March to May. Native.
Calliandra eriophylla Benth. Fairy duster. Occasional. February to May. Native.
Cercidium floridum Benth. Blue Paloverde. March to May. Native.
Dalea formosa Torr. Feather Dalea. Papilionoid. Growing on gravelly and rocky slopes of canyon and above on clay, gravelly flats. Occasional. March to June. Native.
Dalea pogonathera Gray. Bearded Dalea. Papilionoid. Occasional. March to September. Native.
Hoffmannsegia glauca (Ort.) Eifort. Hog potato. Papilionoid. Rare. April to September. Native.

Fouquieriaceae (Ocotillo Family) Common. April or May and with summer rains. Native.

Gentianaceae (Gentian Family)

Centarium calycosum (Buckl.) Fern. Rare. March to November. Native.

Geraniaceae (Geranium Family)
Erodium cicutarium (Linnaeus) L'Heritier. Filaree. Introduced from Europe during Hohokam times. Winter-Spring.

Hydrophyllaceae (Waterleaf Family)
Phacelia bombycina Woot. & Standl. Wild Heliotrope. Common. Spring. Native.
Phacelia distans Benth. Blue Phacelia. Ephemeral herb. Common. Spring. Native.

Juglandaceae (Walnut Family)
Juglans major (Torr.) Heller. Walnut. Common. Early spring. Native.

Krameriaceae (Ratany Family)
Krameria parvifolia Benth. Range Ratany. Occasional. April to October. Native.

Lamiaceae (Mint Family)
Aloysia wrightii (Gray) Heller. Bee Bush. Occasional. August to October. Native.
Salvia columbariae Bentham. Chia. Occasional. Spring. Native.

Malvaceae (Mallow Family)
Abutilon incanum (Link) Sweet. Indian Mallow. Occasional. April to October. Native.
Sphaeralcea laxa Woot & Standl. Caliche Globe Mallow. Common. March to November. Native.

Oleaceae (Olive Family)
Fraxinus pennsylvanica ssp. *velutina* Torr. Velvet Ash. Common. March to May. Native.
Menodora scabra A. Gray.Occasional. March to September. Native.

Onagraceae (Primrose Family)
Oenothera primiveris Gray. Spring Evening Primrose. Occasional. March to May. Native.

Plantaginaceae (Plantain Family)
Plantago purshii Roaem & Schult. Common. February to July. Native.

Polemoniaceae (Phlox Family)
Gilia mexicana A. & V. Grant. Common. Spring. Native.
Ipomopsis longiflora (Torr.) G. Don. Common. March to June. Native.

Ranunculaceae (Buttercup Family)
Anemone tuberosa Rybd. Common. February to April. Native.
Clematis drummondi Nutt. Virgin's Bower. Occasional. May to September. Native.

Delphinium scaposum Greene. Barestem Larkspur. Common. March to May. Native.

Rhamnaceae (Buckthorn Family)
Condalia warnocki M.C. Johnston var. *kearneyana* M.C. Johnston. (*Condalia spathulata* Gray in Kearney & Pebbles, 1960). Bitter Condalia. Common. July-September. Native.
Zizyphus obtusifolia (Hooker ex. T.&G.) A. Gray ssp. *canescens*. (*Condalia lycioides* Gray in Kearney and Peebles, 1960). Grey Thorn. Occasional. May to September. Native.

Rutaceae (Rue Family)
Thamnosma texana (Gray) Torr. Turpentine-broom. Occasional. March to June. Native.

Salicaceae (Willow Family)
Salix goodingi Ball. Gooding Willow. Common. Spring. Native.

Scrophulariaceae (Figwort Family)
Castilleja minor Gray. Paint-brush. Rare. April to August. Native.
Maurandya antirrhiniflora Humb. & Bonpl. Blue Snapdragon Vine. Occasional. April to October. Native.
Mimulus guttatus (D.C.) Monkey Flower. Common. March to September. Native.
Penstemon parryi Gray. Common. Early spring. Native.
Veronica anagallis-aquatica L. Water seepwell. Common in water catchments. March to September. Native.

Solanaceae (Nightshade Family)
Chamaesaracha sordida (Dunal) Gray. (*C. sordida* Gray in Kearney & Peebles, 1960). Dingy Chamaesaracha. Common. April to September. Native.
Nicotiana trigonophylla Dunal. Desert Tobacco. Common in sandy soils. March through November. Native.

Tamaricaceae (Tamarix Family)
Tamarix chinensis Pall. Tamaris. Occasional. March to August. Naturalized from Eurasia.

Urticaceae (Nettle Family)
Parietaria hespera Hinton. Common. Flowering most of the year in the southwest. Native.

LILIOPSIDA (Monocots)

Agavaceae (Agave Family)
Agave chrysantha Pebbles. Golden-Flowered Agave. Common. June to August. Native.
Yucca baccata Torrey var. *brevifolia*. Blue Yucca. Common. Spring. Native.
Yucca elata Engelm. Palmilla. Common. May-July. Native.

Alliaceae (Onion Family)

Dichelostemma pelchellum (Salisb.) Heller. Bluedicks. Common. Spring. Native.

Cyperaceae (Sedge Family)
Eleocharis montevidensis Kunth. Spike-rush. Occasional. Native.

Draceanaceae
Dasylirion wheeleri S. Wats. Desert Spoon. Common. Early summer. Native.

Iridaceae (Iris Family)
Sisyrinchium cernuum (Bicknell) Kearney. Blue-eyed Grass. Along wash edge in moist, shady, sandy soil within 10 m of semi-permanent water catchment. Rare. March. Native.

Liliaceae (Lily Family)
Calochortus kennedyi Porter var. *Munzii* Jepson. Desert Mariposa Lily. Rare. March to May. Native.

Common and Scientific Names of Perennial Plants Observed at Davidson Canyon

(compiled by Environmental Planning Group)

Common Name	Scientific Name	Primary Affinity
Grasses		
Bermuda Grass	*Cynodon dactylon*	***Riparian***
Deer Grass	*Muhlenbergia rigens*	Riparian
Trees		
Arizona Walnut	*Juglans major*	Riparian
Blue Palo Verde	*Parkinsonia florida*	Sonoran/Mohavean
Canyon Hackberry	*Celtis reticulata*	Riparian
Goodding Black Willow	*Salix gooddingii*	Riparian
One-seed Juniper	*Juniperus monosperma*	Conifer Woodland[1]
Salt Cedar	*Tamarix chinensis*	Riparian
Velvet Ash	*Fraxinus pennsylvanica*	Riparian
Velvet Mesquite	*Prosopis velutina*	Riparian & Upland
Shrubs and Subshrubs		
Burroweed	*Haplopappus tenuisectus*	Sonoran/Chihuahuan
California Buckwheat	*Eriogonum fasciculatum*	Sonoran/Mohave
Catclaw Acacia	*Acacia greggii*	Universal
Cheeseweed Burrobrush	*Hymenoclea monogyra*	Riparian
Creosote Bush	*Larrea tridentata*	Universal
Desert Broom	*Baccharis sarothroides*	Sonoran
Desert Hackberry	*Celtis pallida*	Riparian
Desert Zinnia	*Zinnia acerosa*	Sonoran/Chihuahuan
Fairy Duster	*Calliandra eriophylla*	Sonoran
Four-wing Saltbush	*Atriplex canescens*	Universal
Graythorn	*Ziziphus obtusifolia*	Universal
Mariola	*Parthenium incanum*	Chihuahuan
Paper Daisy	*Psilostrophe cooperi*	Sonoran/Mohavean
Ocotillo	*Fouquieria splendens*	Universal
Range Ratany	*Krameria grayi*	Sonoran
Seepwillow	*Baccharis salicifolia*	Riparian
Shrubby Coldenia	*Tiquilia canescens*	Universal
Virgin's Bower (semi-woody vine)	*Clematis drummondii*	Riparian
Warnock Condalia	*Condalia warnockii*	Desert Grassland
Whitethorn Acacia	*Acacia constricta*	Sonoran/Chihuahuan
Wright Lippia	*Aloysia wrightii*	Universal
Cacti		
Barrel Cactus	*Ferocactus wislizeni*	Universal
Cholla Cactus	*Opuntia* sp.	Universal
Pincushion	*Mammillaria grahamii*	Universal
Prickly Pear	*Opuntia phaeacantha*	Universal
Saguaro	*Cereus giganteus*	Sonoran
Yuccas, Agave, Sotol		
Banana Yucca	*Yucca baccata*	Desert Grassland
Soaptree Yucca	*Yucca elata*	Desert Grassland
Parry Agave	*Agave parryi*	Desert Grassland
Desert Spoon	*Dasylirion wheeleri*	Desert Grassland

[1]Great Basin conifer woodland

Observations made by EPG personnel on 15 January 2004.

APPENDIX F

Priority and Vulnerable Species List

Priority Vulnerable Species with Modeled Habitat at Bar V Ranch

(Provided by Pima County Regional Flood Control District)

Common Name	Scientific Name	Probability
Mammals		
Allen's Big-eared Bat	*Idionycteris phyllotis*	Very Low
Arizona Shrew	*Sorex arizonae*	Very Low
California Leaf-nosed Bat	*Macrotus californicus*	High
Lesser Long-nosed Bat***	*Leptonycteris curasoae yerbabuenae*	High
Merriam's Mouse	*Peromyscus merriami*	Low
Mexican Long-tongued Bat	*Choeronycteris mexicana*	Moderate
Pale Townsend's Big-eared Bat	*Plecotus townsendii pallescens*	High
Western Yellow Bat	*Lasiurus xanthinus = ega*	Low
Western Red Bat	*Lasiurus blossevillii*	Moderate
Birds		
Abert's Towhee	*Pipilo aberti*	High
Bell's Vireo	*Vireo bellii*	Very High
Cactus Ferruginous Pygmy-owl***	*Glaucidium brasilianum cactorum*	Low
Rufous-winged Sparrow	*Aimophila carpalis*	Moderate
Southwestern Willow Flycatcher***	*Empidonax traillii extimus*	Low[1]
Swainson's Hawk	*Buteo swainsoni*	High[2]
Western Burrowing Owl	*Athene cunicularia hypugaea*	Very Low
Western Yellow-billed Cuckoo	*Coccyzus americanus occidentalis*	Moderate[3]
Amphibians and Reptiles		
Chiricahua Leopard Frog*	*Rana chiricahuensis*	Low
Lowland Leopard Frog	*Rana yavapaiensis*	Moderate
Desert Box Turtle	*Terrapene ornata luteola*	Moderate
Giant Spotted Whiptail	*Cnemidophorus burti stictogrammus*	Low
Ground Snake	*Sonora semiannulata*	Moderate
Mexican Garter Snake	*Thamnophis eques megalops*	Low
Tucson Shovelnose Snake	*Chionactis occipitalis klauberi*	Low
Fishes		
Desert Pupfish***	*Cyprinodon macularius macularius*	Very Low
Desert Sucker	*Catostomus clarki*	Very Low
Gila Chub**	*Gila intermedia*	Very Low
Gila Topminnow***	*Poeciliopsis occidentalis occidentalis*	Low
Longfin Dace	*Agosia chrysogaster*	Present
Sonora Sucker	*Catostomus insignis*	Very Low
Plants		
Acuna cactus	*Echinomastus erectocentrus var. acunensis*	Very Low
Huachuca Water Umbel***	*Lilaeopsis schaffneriana var. recurva*	Moderate
Needle-spined Pineapple Cactus	*Echinomastus erectocentrus var. erectocentrus*	Moderate
Pima Pineapple Cactus***	*Coryphantha scheeri var. robustispina*	Moderate

1 – Possibly fairly common in willows during migration, but not breeding
2 – During migration – in the upland habitats at Bar V Ranch
3 – During migration – not likely to nest in Davidson Canyon

*** Endangered
** Proposed Endangered
* Threatened

APPENDIX G

Letters of Support

Sonoran Institute

healthy landscapes • vibrant economies • livable communities

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FEB 04 2005

Pima Association of Governments

February 2, 2005

David Scalero
Pima County Regional Flood Control District
201 N. Stone Avenue, 4th Floor
Tucson, Arizona 85701

Dear Mr. Scalero,

The Sonoran Institute supports Pima County Regional Flood Control District's nomination to designate Davidson Canyon as a Unique Water of the State of Arizona. The Sonoran Institute is a non-profit conservation organization based in Tucson, Arizona that has been working to protect the natural and cultural resources of the area surrounding Davidson Canyon for fifteen years. Protection of the wildlife corridor that passes through Davidson Canyon and under Interstate 10 is critical for the viability of a much larger wildlife corridor: an immense region that extends from the tip of the Sierra Madre Mountains in Sonora, Mexico to the Mogollon Highlands in central Arizona. This corridor is the largest North-South wildlife corridor that crosses the U.S.-Mexico border. Protection of Davidson Canyon is critical because the Davidson Canyon overpass along Interstate 10 allows wildlife and particularly large mammals to pass underneath the highway. There are only two such overpasses that cross the Interstate.

In addition, a recent report by the Nature Conservancy[1] showed that the Apache Highlands Ecoregion, of which Davidson Canyon is a part, has some of the highest ecological value in Arizona. This is based on an analysis that demonstrated that the greatest number of conservation targets was found in this region, including the most rare and endemic targets (both species and communities).

The Sonoran Institute has also worked with many partners and residents in the area surrounding Davidson Canyon to encourage active support for protection of this resource. In August 2003 a citizens' council that is representative of many local residents, the Cienega Corridor Conservation Council, named Davidson Canyon as one of the top priorities for Pima County acquisition with potential Open Space Bond moneys from the 2004 Open Space Bond. Several participants in the Cienega Corridor Conservation Council also came to the public hearings of the Arizona State Transportation Board to support Pima County's application for the State Transportation Enhancement grant to help fund purchase of Davidson Canyon. Now that Pima County acquisition of the property is under way, a Unique Water of Arizona designation would further strengthen the local efforts to protect this precious State resource.

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[1] Marshall, R.M., D. Turner, A. Gondor, D. Gori, C. Enquist, G. Luna, R. Paredes Aguilar, S. Anderson, S. Schwartz, C. Watts, E. Lopez, P. Comer. 2004. *An Ecological Analysis of Conservation Priorities in the Apache Highlands Ecoregion.* Prepared by The Nature Conservancy of Arizona, Instituto del Medio Ambiente y Desarrollo Sustentable del Estado de Sonora, agency and institutional partners. 152 pp.

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www.sonoran.org

In addition to the reasons mentioned above, there are many other important aspects to consider regarding this nomination:

- Year round surface flow exists at various points within Davidson Canyon and supports a substantial amount of cottonwood and willow riparian vegetation.
- Davidson Canyon is a tributary to Cienega Creek, already a Unique Water of the State of Arizona.
- Davidson Canyon is identified in Pima County's Sonoran Desert Conservation Plan as "Biological Core."
- Several recreation trails and access areas are available to hikers, bikers, and equestrians.
- The Cienega Corridor Conservation Council successfully nominated the area including Cienega Creek and Davidson Canyon for inclusion on the Cultural Landscape Foundation's list of endangered cultural landscapes, critical to maintenance of national heritage (http://www.tclf.org/landslide/2004/index.htm).
- Davidson Canyon and the Cienega Creek watershed provide important quality drinking water for the communities surrounding Tucson.

In sum, the value that Davidson Canyon adds to wildlife and human communities in Arizona is immeasurable. Sonoran Institute fully supports this nomination for a Unique Waters of the State of Arizona designation. Please do not hesitate to contact me with questions.

Sincerely,

EM Brott

Emily M. Brott
Project Manager
Sonoran Institute
520-290-0828
emily@sonoran.org

Rincon Institute

February 3, 2005

David Scalero
Pima County Regional Flood Control District
201 N. Stone Avenue, 4th Floor
Tucson, Arizona 85701

Dear Mr. Scalero,

On behalf of the Rincon Institute, I urge my support for the Pima County Regional Flood Control District's nomination to designate Davidson Canyon as a Unique Water of the State of Arizona.

Established in 1991, the Rincon Institute is a non-profit conservation organization focused on protecting the natural resources within and surrounding Saguaro National Park East. Rincon Institute played an integral role in designation of Las Cienegas National Conservation Area (NCA) and has been working to encourage protection of the north-south corridor that connects Las Cienegas NCA and Saguaro National Park East for the past four years. This corridor, called the Cienega Corridor, is a wildlife migration route and is significantly important for both natural and cultural resources. The wildlife corridor that passes through Davidson Canyon and under Interstate 10 is critical for the viability of the Cienega Corridor. Protection of Davidson Canyon is critical because the Davidson Canyon overpass along Interstate 10 allows wildlife and particularly large mammals to pass underneath the highway. There are only two such overpasses that cross the Interstate. Davidson Canyon has additional significant ecological value including: year round surface flow at various points, a healthy riparian ecosystem, is a tributary to a currently designated Unique Water of the State of Arizona, recreation opportunities, and it provides important quality drinking water.

The Rincon Institute has been working with local land managers, conservation organizations, residents and other partners in the area surrounding Davidson Canyon to encourage active support for protection of this resource. In August 2003 a citizens' council that is representative of many local residents, the Cienega Corridor Conservation Council, named Davidson Canyon as one of the top priorities for Pima County acquisition with potential Open Space Bond moneys from the 2004 Open Space Bond. Now that Pima County acquisition of the property is under way, a Unique Water of Arizona designation would further strengthen the local efforts to protect this precious State resource.

The value that Davidson Canyon adds to wildlife and human communities in Arizona is immeasurable. The Rincon Institute fully supports this nomination for a Unique Waters of the State of Arizona designation. Please feel free to contact me with questions.

Sincerely,

Michelle Z

Michelle Zimmerman, Program Director